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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Crawford Maunu PLLC
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EXAMINER

SWERDLOW, DANIEL

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 12/29/2003

15

Please find below and/or attached an Office communication concerning this application or proceeding.

TS

Office Action Summary

Application No.

09/788,267

Applicant(s)

ZENG ET AL.

Examiner

Daniel Swerdlow

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 and 38-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-10, 17, 21, 23, 24, 27, 30 and 32-35 is/are allowed.
- 6) ☒ Claim(s) 1-7, 11-16, 18-20, 22, 25, 26, 28, 29, 31 and 38-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 25, 38 and 39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claim 25 recites the limitation "the crosstalk interference" in the 9th line. There is insufficient antecedent basis for this limitation in the claim. For the purpose of this Office action, examiner assumes the phrase is "the first estimate of the crosstalk response".

4. Claim 38 recites the limitation "the first signal" in the 3rd line. There is insufficient antecedent basis for this limitation in the claim.

5. Claim 39 recites the limitation "the first signal" in the 6th line. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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7. Claims 1, 6, 11, 15 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Bingel et al. (US Patent 6,173,021).

8. Regarding Claim 1, Bingel discloses a method comprising: an adder (Figs. 1 and 2, reference 12; column 3, lines 24-27) that receives (i.e., **collects**) a digital signal (i.e., **received data**) (Fig. 2, reference 7) converted from (i.e., **corresponding to**) the output of (i.e., **received signal from**) a differential **receiver** at a customer premises (Figs. 1 and 2, reference 15; column 3, lines 2-5); a differential receiver (Figs. 1 and 2, reference 15; column 3, lines 2-5) that receives (i.e., **collects**) a signal (i.e., **primary data**) **from** a differential transmitter at a central office (i.e., a **primary transmitter**) (Fig. 1, reference 14) via a twisted pair (Fig. 1, reference 5); a detector (Figs. 1 and 2, reference 9; column 3, lines 15-17) that detects (i.e., **collects**) interference coupled into the twisted pair (i.e., **crosstalk data from a crosstalk transmitter**); and a sampling/scaling device (Figs. 1 and 2, reference 10; column 4, lines 9-16) that adaptively produces an interference cancellation signal (i.e., **identifies a crosstalk function corresponding to the crosstalk data**) and is implemented separately from a modem and located outside the customer premises (i.e., **at a location remote from the receiver**) (Fig. 1, reference 6; column 3, lines 30-33).

9. Claim 6 claims the method of Claim 1 further comprising collecting a plurality of sets of crosstalk data from a plurality of crosstalk transmitters, including a first set of crosstalk data from a first crosstalk transmitter. As stated above apropos of Claim 1, Bingel anticipates all elements of that claim. In addition, Bingel discloses **collecting** interference (i.e., **crosstalk data**) **from a plurality of sources** (i.e., **crosstalk transmitters**) (column 3, lines 8-14). Further, as

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shown above apropos of Claim 1, Bingel discloses **including interference from a first transmitter and identifying a corresponding crosstalk function.**

10. Claim 11 claims the method of Claim 1 further comprising provisioning communications lines in a DSL system in which the identified crosstalk function is identified. As stated above apropos of Claim 1, Bingel anticipates all elements of that claim. In addition, Bingel discloses use of the method in a DSL system (column 3, lines 37-39). Therefore, Bingel anticipates all elements of Claim 11.

11. Claim 15 is essentially similar to Claim 1 and is rejected for the same reasons.

12. Claim 20 is essentially similar to Claim 11 and is rejected for the same reasons.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 2 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Szechenyi (US Patent 5,271,037) in view of Sands (US Patent 6,134,283).

15. Claim 2 claims a method of identifying crosstalk in a received signal comprising collecting received data corresponding to the received signal from a receiver. Szechenyi discloses crosstalk compensation comprising utilizing (i.e., collecting) a control signal (Fig. 1, reference RSV; column 2, lines 61-66) that corresponds to the received data claimed. Claim 2

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further claims the method comprises collecting primary data from a primary transmitter.

Szechenyi discloses utilizing (i.e., collecting) a receiving line signal (Fig. 1, reference EL1; column 3, lines 59-61) that corresponds to the primary data claimed. Claim 2 further claims the method comprises collecting crosstalk data from a crosstalk transmitter. Szechenyi discloses utilizing (i.e., collecting) a reference signal (Fig. 1, reference R1(1); column 2, lines 43-52) that corresponds to the crosstalk data claimed. Claim 2 further claims the method comprises identifying a crosstalk function corresponding to the crosstalk data. Szechenyi discloses an adaptive filter (Fig. 1, reference F1; column 3, lines 26-28) that simulates the crosstalk signal (i.e., identifies the crosstalk function) associated with the reference signal that corresponds to the crosstalk data claimed. Therefore, Szechenyi anticipates all elements of Claim 2 with the exception of determining a first estimate of a timing offset between the received data and the crosstalk data. Sands discloses computing an alignment error estimate (i.e., determining a first estimate of a timing offset) (column 6, lines 23-25) to synchronize receivers (i.e., receive data) and transmitters (column 6, lines 3-8) utilizing crosstalk interference levels (i.e., crosstalk data). It would have been obvious to one skilled in the art at the time of the invention to apply received data and crosstalk data alignment error estimation as taught by Sands to the crosstalk compensation taught by Szechenyi for the purpose of further reducing crosstalk.

16. Claim 26 is essentially similar to Claim 2 and is rejected for the same reasons.

17. Claims 3 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Szechenyi in view of Sands and further in view of Pfeil et al. (US Patent 6,160,511).

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18. Claim 3 claims the method of Claim 2 wherein determining the first estimate of the timing offset comprises cross-correlating the received data and the crosstalk data if the timing offset is other than zero. As stated above apropos of Claim 2, the combination of Szechenyi and Sands makes obvious all elements of that claim. Therefore, the combination makes obvious all elements of Claim 3 with the exception of determining the first estimate of the timing offset comprising cross-correlating the received data and the crosstalk data. Pfeil discloses using cross-correlation to find timing offset (column 5, lines 56-58). It would have been obvious to one skilled in the art at the time of the invention to apply cross-correlation as taught by Pfeil to the combination made obvious by Szechenyi and Sands for the purpose of further finding the timing offset.

19. Claim 28 is essentially similar to Claim 3 and is rejected for the same reasons.

20. Claims 4 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bingel in view of Gitlin (US Patent 4,995,104).

21. Claim 4 claims the method of Claim 1 wherein identifying the crosstalk function comprises performing an estimation from the group comprising a standard least-squares estimation and a weighted least squares estimation. As stated above apropos of Claim 1, Bingel anticipates all elements of that claim. In addition, Bingel discloses adaptively scaling in amplitude and phase (i.e., estimating) the crosstalk function (column 3, lines 20-24) using mathematical algorithms (column 4, lines 12-16). However, Bingel is silent with respect to the nature of these algorithms. Therefore, Bingel anticipates all elements of Claim 4 with the exception of estimation from the group comprising a standard least-squares estimation and a

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weighted least squares estimation. Gitlin discloses use of least-squares estimation to estimate an interference (i.e., crosstalk) function (column 4, lines 39-44). It would have been obvious to one skilled in the art at the time of the invention to apply least-squares estimation as taught by Gitlin to the crosstalk compensation taught by Bingel for the purpose of providing the mathematical algorithm.

22. All elements of Claim 19 are comprehended by Claim 4. As such, Claim 19 is rejected for the same reasons as Claim 4.

23. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bingel in view of Gitlin and further in view of Sands.

24. Claim 5 claims the method of Claim 4, wherein performing an estimation includes jointly determining an estimate of the timing offset between the received data and the crosstalk data and identifying a crosstalk function corresponding to the crosstalk data. As stated above apropos of Claim 4, the combination of Bingel and Gitlin makes obvious all elements of that claim. In addition, as stated above apropos of Claim 1, Bingel discloses identifying a crosstalk function corresponding to the crosstalk data. Therefore, the combination makes obvious all elements of Claim 5 with the exception of determining an estimate of the timing offset between the received data and the crosstalk data. As stated above apropos of Claim 2, Sands discloses computing an alignment error estimate (i.e., determining a first estimate of a timing offset) (column 6, lines 23-25) to synchronize receivers (i.e., receive data) and transmitters (column 6, lines 3-8) utilizing crosstalk interference levels (i.e., crosstalk data). It would have been obvious to one skilled in the art at the time of the invention to apply received data and crosstalk data alignment error

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estimation as taught by Sands to the combination of Bingel and Gitlin for the purpose of further reducing crosstalk.

25. Claims 7, 16 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bingel in view of Sands.

26. Claim 7 claims the method of Claim 6 further comprising determining a first estimate of a timing offset between the received data and the crosstalk data. As stated above apropos of Claim 6, Bingel anticipates all elements of that claim. Therefore, Bingel anticipates all elements of Claim 7 with the exception of determining a first estimate of a timing offset between the received data and the crosstalk data. Sands discloses computing an alignment error estimate (i.e., determining a first estimate of a timing offset) (column 6, lines 23-25) to synchronize receivers (i.e., receive data) and transmitters (column 6, lines 3-8) utilizing crosstalk interference levels (i.e., crosstalk data). It would have been obvious to one skilled in the art at the time of the invention to apply received data and crosstalk data alignment error estimation as taught by Sands to the method taught by Bingel for the purpose of further reducing crosstalk.

27. All elements of Claim 16 are essentially comprehended by Claim 7. As such, Claim 16 is rejected for the reasons stated above apropos of Claim 7.

28. Claim 25 is essentially similar to Claim 16 and is rejected for the same reasons.

29. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bingel.

30. Claim 12 claims the method of Claim 1 further comprising performing DSL system diagnosis services in a DSL system in which the identified crosstalk function is identified. As

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stated above apropos of Claim 1, Bingel anticipates all elements of that claim. In addition, as stated above apropos of Claim 11, Bingel discloses use of the method in a DSL system. It would have been obvious to one skilled in the art at the time of the invention to perform DSL system diagnosis services in the crosstalk compensated DSL system of Bingel for the purpose of resolving network problems.

31. Claim 13 claims the method of Claim 1 further comprising providing DSL system maintenance services in a DSL system in which the identified crosstalk function is identified. As stated above apropos of Claim 1, Bingel anticipates all elements of that claim. In addition, as stated above apropos of Claim 11, Bingel discloses use of the method in a DSL system. It would have been obvious to one skilled in the art at the time of the invention to perform DSL system diagnosis services in the crosstalk compensated DSL system of Bingel for the purpose of resolving network problems.

32. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bingel in view of Terry.

33. Claim 14 claims the method of Claim 1 further comprising performing spectral management services for a DSL system in which the identified crosstalk function is identified. As stated above apropos of Claim 1, Bingel anticipates all elements of that claim. In addition, as stated above apropos of Claim 11, Bingel discloses use of the method in a DSL system. Therefore, Bingel anticipates all elements of Claim 14 with the exception of performing spectral management services. Terry discloses determining PSD for a communications system (i.e., performing spectral management services) (column 2, lines 41-46). It would have been obvious

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to one skilled in the art at the time of the invention to apply spectral management as taught by Terry to the crosstalk compensated DSL network of Bingel for the purpose of further reducing crosstalk.

34. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bingel in view of Sands and further in view of Pfeil.

35. Claim 18 claims the system of Claim 16 wherein the first timing offset estimator comprises a cross-correlator configured to perform a cross-correlation of the combined signal and the second signal to provide the first timing offset. As stated above apropos of Claim 16, the combination of Bingel and Sands makes obvious all elements of that claim. Therefore, the combination makes obvious all elements of Claim 18 with the exception of a cross-correlator configured to perform a cross-correlation of the combined signal and the second signal to provide the first timing offset. Pfeil discloses using cross-correlation to find timing offset (column 5, lines 56-58). It would have been obvious to one skilled in the art at the time of the invention to apply cross-correlation as taught by Pfeil to the combination made obvious by Bingel and Sands for the purpose of finding the timing offset.

36. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bingel in view of Cioffi (US Patent 5,887,032).

37. Claim 22 claims the system of Claim 15 wherein the first transmitter, the second transmitter and the receiver are modems. As stated above apropos of Claim 15, Bingel anticipates all elements of that claim. In addition, Bingel discloses the transmitter that

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corresponds to the first transmitter claimed and the receiver being DSL modems (column 3, lines 37-39). Therefore, Bingel anticipates all elements of Claim 22 with the exception of the second transmitter being a modem. Cioffi discloses mitigation of crosstalk introduced by a modem transmitter (column 6, lines 45-46). It would have been obvious to one skilled in the art at the time of the invention to apply mitigation of modem-induced interference as taught by Cioffi to the system taught by Bingel for the purpose of reducing the interference.

38. Claims 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bingel in view Sands and further in view of Gitlin.

39. Claim 29 claims the method of Claim 25 wherein the crosstalk estimator comprises a least-squares estimator to determine the first estimate of the crosstalk response. As stated above apropos of Claim 25, the combination of Bingel and Sands makes obvious all elements of that claim. In addition, Bingel discloses adaptively scaling in amplitude and phase (i.e., estimating) the crosstalk function (column 3, lines 20-24) using mathematical algorithms (column 4, lines 12-16). However, Bingel is silent with respect to the nature of these algorithms. Therefore, The combination makes obvious all elements of Claim 29 with the exception of estimation from the group comprising a standard least-squares estimation and a weighted least squares estimation. Gitlin discloses use of least-squares estimation to estimate an interference (i.e., crosstalk) function (column 4, lines 39-44). It would have been obvious to one skilled in the art at the time of the invention to apply least-squares estimation as taught by Gitlin to the crosstalk compensation mad obvious by Bingel and Sands for the purpose of providing the mathematical algorithm.

40. Claims 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Szechenyi in view of Gitlin.

41. Claim 40 claims a method of identifying crosstalk in a received signal comprising collecting received data corresponding to the received signal from a receiver. Szechenyi discloses crosstalk compensation comprising utilizing (i.e., collecting) a control signal (Fig. 1, reference RSV; column 2, lines 61-66) that corresponds to the received data claimed. Claim 40 further claims the method comprises collecting primary data from a primary transmitter. Szechenyi discloses utilizing (i.e., collecting) a receiving line signal (Fig. 1, reference EL1; column 3, lines 59-61) that corresponds to the primary data claimed. Claim 40 further claims the method comprises collecting crosstalk data from a crosstalk transmitter. Szechenyi discloses utilizing (i.e., collecting) a reference signal (Fig. 1, reference R1(1); column 2, lines 43-52) that corresponds to the crosstalk data claimed. Claim 40 further claims the method comprises identifying a crosstalk function corresponding to the crosstalk data. Szechenyi discloses an adaptive filter (Fig. 1, reference F1; column 3, lines 26-28) that simulates the crosstalk signal (i.e., identifies the crosstalk function) associated with the reference signal that corresponds to the crosstalk data claimed. Claim 40 further claims identifying the crosstalk function comprising performing an estimation from the group comprising a standard least-squares estimation and a weighted least squares estimation. Szechenyi discloses simulating (i.e., estimating) the crosstalk function using adaptive filters with coefficients determined by means of known algorithms (column 3, lines 23-38). Therefore, Szechenyi anticipates all elements of Claim 40 with the exception of estimation from the group comprising a standard least-squares estimation and a

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weighted least squares estimation. Gitlin discloses use of least-squares estimation to estimate an interference (i.e., crosstalk) function (column 4, lines 39-44). It would have been obvious to one skilled in the art at the time of the invention to apply least-squares estimation as taught by Gitlin to the crosstalk compensation taught by Szechenyi for the purpose of providing the adaptive filtering algorithm.

42. Claims 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Szechenyi in view of Terry.

43. Claim 31 claims a crosstalk identifier comprising a collector to collect data from a primary signal transmitter, a crosstalk signal transmitter and a receiver. Szechenyi discloses crosstalk compensation equipment that collects a receiving line signal (Fig. 1, reference EL1; column 3, lines 59-61) that is inherently produced by a transmitter that corresponds to the primary signal transmitter claimed, a signal from a transmitter (Fig. 1, reference S1; column 2, lines 30-34) that corresponds to the crosstalk signal transmitter claimed and a signal from an analog to digital converter (Fig. 1, reference AD; column 3, lines 8-13) that corresponds to the receiver claimed. Claim 31 further claims the identifier comprises a crosstalk estimator. Szechenyi discloses a crosstalk compensation circuit (Fig. 1, reference KS; column 2, lines 26-30) that corresponds to the estimator claimed. Claim 31 further claims the identifier is configured to be used at a third party site remote from the transmitters and the receivers. Therefore, Szechenyi anticipates all elements of Claim 31 with the exception of the identifier being configured to be used at a third party site remote from the transmitters and the receivers. Terry discloses monitoring PSD (i.e., identifying crosstalk) performed centrally by a separate (i.e., configured to be used at a third party remote site) computer that corresponds to the

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identifier claimed (column 7, lines 58-64). It would have been obvious to one skilled in the art at the time of the invention to apply remote crosstalk identification as taught by Terry to the crosstalk compensation taught by Szechenyi for the purpose of reducing cost by having a single controller for multiple sites.

Allowable Subject Matter

44. Claims 8 through 10, 17, 21, 23, 24, 27, 30 and 32 through 35 are allowed.

45. The following is an examiner's statement of reasons for allowance:

46. Claims 8 through 10, 17, 23, 24, 27 and 32 are allowable for reasons stated in the prior Office action.

47. Claim 21 is allowable due to dependence from Claim 17.

48. Claim 30 is allowable matter due to dependence from Claim 27.

49. Claim 33 claims a method of dynamically managing spectra in a DSL system. Terry discloses adjusting (i.e., dynamically managing) power spectral density (i.e., spectra) in a DSL system. Claim 33 further claims the method comprises identifying crosstalk functions and characteristics in the DSL system. Bingel discloses detecting and scaling in phase and amplitude interference in a DSL system. Claim 33 further claims the crosstalk functions and characteristics are identified as a function of a differential between a known transmitted data and a combination of the known transmitted data and crosstalk noise with the spectra managed based on transferred information concerning the identified crosstalk functions. As such, Claim 33 requires the crosstalk functions be determined using a priori knowledge of the transmitted data. While Szechenyi and Bingel each teach identification of crosstalk functions, Szechenyi using adaptive

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filters operating on the crosstalk-inducing signals and Bingel using adaptive scaling operating on a detected interference-inducing signal, neither Szechenyi nor Bingel use a priori knowledge of the transmitted data. As such, the prior art neither anticipates nor makes obvious identifying crosstalk functions as a function of a differential between a known transmitted data and a combination of the known transmitted data and crosstalk noise. Therefore, Claim 33 is allowable.

50. Claims 34 and 35 are allowable due to dependence from Claim 33.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

51. Applicant's arguments filed 20 October 2003 with respect to Claims 1, 4 through 7, 11 through 16, 18 through 20, 25, 29 and 40 have been considered but are moot in view of the new ground(s) of rejection.

52. Applicant's arguments filed 20 October 2003 have been fully considered but they are not persuasive.

53. Regarding Claims 2, 3, 26 and 28, applicant alleges that Sands fails to disclose time offset between the claimed parameters. Examiner respectfully disagrees. The claimed parameters are received data and crosstalk data. Sands discloses utilizing crosstalk interference levels (i.e., crosstalk data) to synchronize receivers (i.e., receive data) with transmitters (column

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6, lines 1-8) by computing (i.e., estimating) an alignment error (i.e., time offset) (column 6, lines 23-26). The claims are not limiting as to how this timing offset is used once it is estimated. As such, there is motivation to include this technique of interference reduction with the technique disclosed by Szechenyi to achieve the benefits of both methods.

54. Regarding Claim 31, in response to applicant's argument that the combination of Szechenyi and Terry fails to make obvious the claimed invention, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this case, Terry is relied upon only for the teaching of providing crosstalk monitoring and mitigation using processing performed at a remote location.

Conclusion

55. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Swerdlow whose telephone number is 703-305-4088. The examiner can normally be reached on Monday through Friday between 8:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forrester Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

ds


XU MEI
PRIMARY EXAMINER